Enterprise Contextual Notifier, Contextual Tag Clouds towards more Relevant Awareness

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ABSTRACT

On the so-called Web 2.0, numerous Social Networking Sites (SNS) have known a tremendous success as they brought new ways to communicate, interact, learn about people, and share content with them. Besides improving informal social ties, transposing Awareness to the enterprise is very promising for promoting collaboration. However, it can easily lead to information overload, which means productivity loss. With our prototype, we propose a way to stimulate enterprise internal communication while improving the relevance of these interactions with the current working context of their users. This prototype is an efficient tool for cooperation and for discovering relevant people and knowledge.

Author Keywords

Folksonomies, awareness, social networking, information overload, real-time communication, collaborative filtering.

ACM Classification Keywords

H5.3. Computer-supported cooperative work.

General Terms

Algorithms, Experimentation, Human Factors

INTRODUCTION

Since the emergence of the Web 2.0, web sites have become social platforms in which visitors were invited to contribute with their own content. Today, social networking sites (such as Facebook and Twitter), in which users share personal/professional content and interact with their friends/contacts in real time, have become very popular. Despite the taste of awareness of these users for their social communities, and the implied boost of communication and collaboration opportunities brought by social networking tools, the increasing amount of information available on these platforms makes them overly time-consuming (i.e. information overload). We believe that some computational support must be given to users in order to semi-automatically prioritize social updates that are the most relevant to them, according to their current context.

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RESEARCH PROBLEM AND PROPOSED APPROACH

We have been addressing the following hypothesis: the relevance of social updates is a function based on the correlation between the context of the producer (i.e. the user who sent/posted/shared information) and the current context of each consumer (i.e. the user who will see this information). The approach that we propose consists in aggregating users' context in the form of tag clouds synthesized from currently opened documents. After some optional changes of their tag cloud, they can submit it to a relevance matching platform in order to obtain recommended social updates (e.g. a status, a question, a comment) from users having a similar contextual tag cloud.

MOTIVATION FOR USE

Contextual social updates can help one to get a better clue of contributions, interests and plans of other users, whenever they are related to hers. Thus they can trigger new knowledge exchange, communication and collaboration opportunities between yet unknown people. Because it is based on actual context instead of user profiles, the topics of recommendations will change dynamically according to the identified topics covered in the current combination of browsed web pages. The fuzzy nature of folksonomies and the dynamism of frequent social networking updates empower enough serendipity and information renewal to avoid redundant and deprecated recommendations, making this digital experience similar to watercooler or coffee breaks discussions, while carrying on real activities (e.g. listening to the current conference talk). Note that, thanks to its semi-automatic support, this application is not yet-another-social-networking-site, and thus requires no previous experience. Also note that, in order to protect users' privacy, no information will be ever sent to a server before it is explicitly submitted by one.

HOW DOES IT WORK

As a first attempt to prove the feasibility of our approach, we studied four methods to extract tags (key words) from

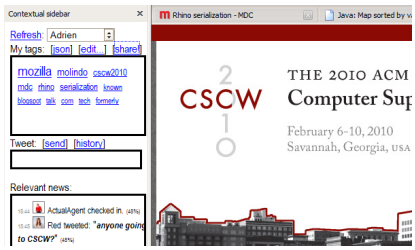

Figure 1. Screenshot of the Firefox extension

the web pages that each user is currently browsing: keyphrase extraction from the content, html metadata extraction, semantic analysis of the pages, and gathering of tags from a popular social bookmarking service (del.icio.us). This experiment showed that the most relevant contextual description was provided by the social bookmarking service; thanks to the "wisdom of crowds" emerging with many users entering highly descriptive tags. Nevertheless, other methods should also participate to the aggregation of contextual tag clouds, especially for web sites that have not been socially tagged yet.

We have thus developed a social networking platform ("Enterprise Contextual Notifier") that recommends relevant social updates to users by sharing these resulting contextual clouds. This platform consists of three components:

- A Firefox extension that tracks when the user opens, selects and closes web pages, and displays relevant social updates rendered by the central server (see below).
- A local lightweight context aggregation server that collect these events and gathers tags, using the four methods explained above, and provides a (web) user interface enabling users to manipulate the resulting contextual tag cloud before submitting it.
- A central server that gathers the contextual tag clouds from users, and send them back fresh social updates that are relevant to their respective contexts.

PREREQUISITES FOR USERS

The prototype is composed of a Firefox extension and a Java-based service. Users thus need to use Firefox version 2.0 or above, to have a Java 1.5 Runtime Environment installed, and to have sufficient administrative rights for installing the required software on their computer.

USAGE OF THE PROTOTYPE

Before using the prototype, each user has to create a quick personal profile in order to control her identity and customize her appearance and preferences for her future contributions to the social networking system. Links and support are then provided to set up and start the prototype software on the user's computer (see prerequisites above).

When the prototype client is running on the user's computer, she has to browse web pages using Firefox. The prototype's user interface can be displayed in a sidebar by pressing its icon in Firefox's toolbar. While browsing web pages, the tag cloud dynamically evolves, matching the corresponding topics and keywords. The user can then share this tag cloud, with an optional status message (called "tweet"), in order to get fresh and relevant updates from other users. For example, as depicted on Figure 1, we see that a user called "Red" asks "*anyone going to CSCW?*". This update is visible to users who share a similar context (i.e. have common topics and keywords in their tag cloud). Red's message, on Figure 1, is shown with 48% relevance according to the common appearance of the "cscw2010" tag, extracted from the official conference page being browsed by both users.

RELATED WORK

The shared feedback approach from Dourish et al. [1] and Babble's asynchronous discussion spaces from Erickson et al. [2] have inspired actual Social Networking Sites, proving that these approaches are efficient to give a sense of awareness, and thus trigger communication and sharing, even in personal social communities. However, as more users get involved in content sharing, Damian et al. reported [3] that information overload must be avoided by filtering updates by relevance. Google Sidewiki is an attempt to gather social contributions on the context of individual web pages. Instead, we propose to notify social contributions adaptively to users' current contextual tag cloud, synthesized from social annotations of currently browsed web sites, and in near-real-time.

CONCLUSION

Our prototype embodies a novel semi-automatic approach for social knowledge sharing and communication, based on contextual folksonomies. Our demonstration will show the usefulness of this approach in the frame of the CSCW conference.

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REFERENCES

[1] P. Dourish and V. Bellotti, "Awareness and coordination in shared workspaces," *Proceedings of the 1992 ACM conference on Computer-supported cooperative work*, 1992, pp. 107 - 114 .

[2] T. Erickson and W.A. Kellogg, "Social translucence: an approach to designing systems that support social processes," *ACM Transactions on Computer-Human Interaction*, vol. 7, 2000, pp. 59-83.

[3] D. Damian, L. Izquierdo, J. Singer, and I. Kwan, "Awareness in the wild: Why communication breakdowns occur," *Second IEEE International Conference on Global Software Engineering, 2007. ICGSE 2007*, 2007, pp. 81-90.